

WHAT IS CLAIMED IS:

- Sub a1* *7*
1. A flat panel field emission display comprising:
a screen having a phosphor coating;
an emission source opposite said screen which selectively excites portions of said phosphor coating to generate visible light; and
a black matrix provided on said screen, said black matrix being formed of a substantially insulative material.
 2. The display of claim 1, wherein said black matrix is formed from praseodymium-manganese oxide.
 3. The display device of claim 1, wherein said emission source includes an array of field emitter tip cathodes.
 4. The display of claim 3, wherein said emission source further includes a low potential extraction grid provided adjacent said field emitter tip cathodes.
 5. The display of claim 4, wherein said array of field emitter tips is formed in matrix addressable by row select control signals.
 6. The display of claim 5, wherein said extraction grid is a continuous electrode, and wherein said field emitter tip matrix is further addressable by column select control signals.
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7. The display of claim 5, wherein said extraction grid includes a plurality of column electrodes addressable by column select control signals.

8. The display of claim 4, wherein said extraction grid is held at a substantially constant low potential value and said field emitter tips are held at a substantially constant potential value higher than said low potential value, and said screen includes a matrix of anode electrodes which are addressable by row and column control signals.

9. The display of claim 1, wherein said display provides color images and wherein said black matrix improves image contrast.

10. A flat panel field emission display, comprising:
a faceplate including a screen, phosphors provided on said screen, and a black matrix provided on said screen;
a baseplate assembly including a plurality of electron emission cathode tips arranged in an array and a low potential extraction grid;
wherein said black matrix is formed from a substantially insulative material.

11. The field emission display of claim 10, wherein said black matrix material is PrMnO_3 .

12. The field emission display of claim 10, wherein said low potential gate is a continuous electrode, and wherein said field emitter tip matrix is further addressable by column select control signals.

13. The field emission display of claim 12, wherein said low potential gate includes a plurality of column electrodes addressable by column select control signals.

14. The field emission display of claim 12, wherein said low potential gate is held at a substantially constant low potential value and said field emitter tips are held at a substantially constant potential value higher than said low potential value and said screen includes a matrix of anode electrodes which are addressable by row and column control signals.

15. A method of making a flat panel field emission display comprising the steps of:
providing a phosphor coating on a display screen;
arranging an emission source opposite said display screen for selectively exciting portions of said phosphor coating to generate visible light during subsequent operation; and
providing a black matrix on said screen, said black matrix being formed of a substantially insulative material.

16. The method of claim 15, wherein said black matrix is formed from praseodymium-manganese oxide.

17. The method of claim 16, wherein said praseodymium-manganese oxide is prepared by combining selected amounts of Pr_6O_{11} with a material selected from the group including MnO_2 and MnCO_3 ; and heating the resulting combination at a temperature ranging from approximately 1200°C to 1500°C .

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18. The method of claim 17, wherein said heating temperature ranges approximately from 1250°C to 1430°C.
19. The method of claim 18, wherein the resulting combination is heated for approximately four hours at the heating temperature.
20. The method of claim 17, wherein the resulting combination is heated for approximately four hours at the heating temperature.
21. The method of claim 17, including the further step of milling the resulting combination subsequent to said heating step to yield a powder having about a 2 μm average particle size.
22. The method of claim 16, wherein said black matrix forming step includes patterning a photoresist material on said screen to expose only those areas of the screen on which the black matrix is to be deposited; depositing said praseodymium-manganese oxide; and removing said photoresist material.
23. The method of claim 22, wherein said step of providing a phosphor coating is performed subsequent to said black matrix forming step and includes patterning a second photoresist material to expose only those areas of the screen on which said phosphor coating is to be provided; depositing said phosphor coating; and removing said second photoresist material.

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